

# Documentation for: erppeakinterval()

Version 1.0

This function is designed to supplement the ERP quantification metrics provided by ERPLAB. This extracts the mean amplitude surrounding the peak latency for each channel in the interval period specified.

Effectively this can be considered as moving the window period to center around the peak amplitude.

This function can be called using the GUI added to the ERPLAB menu or using the command window.

## Example Implementation Code Using Command Window

```
% Obtain peak interval for all channels
ERP.peaks.P3 = erppeakinterval(ERP, ...
    'Label', 'P3', 'Window', [ 300 600 ], 'Polarity', 'Positive', ...
    'Interval', [ -25 25 ], 'Neighborhood', 9, 'Channels', 1:ERP.nchan);

% Obtain peak interval for a subset of channels
ERP.peaks.P3 = erppeakinterval(ERP, ...
    'Label', 'P3', 'Window', [ 300 600 ], 'Polarity', 'Positive', ...
    'Interval', [ -25 25 ], 'Neighborhood', 9, 'Channels', {'FZ', 'CZ', 'PZ'});

% Obtain latency values using ERPLAB and then send them to obtain peak interval
ALLERP = pop_geterpvalues( ERP, [ 300 600 ], 1, ...
    1:ERP.nchan, 'Measure', 'peaklatbl', 'Peakpolarity', 'positive',...
    'Neighborhood', 9, 'Resolution', 6, 'SendtoWorkspace', 'on');
ERP.peaks.P3 = erppeakinterval(ERP, ...
    'Label', 'P3', 'Latencies', ERP_MEASURES, ...
    'Interval', [ -25 25 ], 'Channels', 1:ERP.nchan);

% Multi Component Example: it is also possible to feed multiple components in and have
% the function correct the latency windows based upon when the earlier components occurred
% to prevent peak overlap.

% Returns ERP.peaks.N2 and ERP.peaks.P3
ERP.peaks = erppeakinterval(ERP, {...
    {'Label', 'N2', 'Window', [ 150 400 ], 'Polarity', 'Negative', ...
        'Interval', [ -25 25 ], 'Neighborhood', 9, 'Channels', 1:ERP.nchan};...
    {'Label', 'P3', 'Window', [ 300 600 ], 'Polarity', 'Positive', ...
        'Interval', [ -25 25 ], 'Neighborhood', 9, 'Channels', 1:ERP.nchan}...
});

% Because of the output, it is possible to merge peaks.
% The example below shows how to combine the N2
% and P3 peaks into one for ease of outputting.
% The labels differentiate the peaks within the structure.

N2peaks = erppeakinterval(ERP, 'Window', [ 150 300 ], ...
    'Polarity', 'Negative', 'Neighborhood', 9, 'Channels', 1:ERP.nchan, ...
    'Interval', [ -25 25 ], 'Label', 'N2');
P3peaks = erppeakinterval(ERP, 'Window', [ 300 600 ], ...
    'Polarity', 'Positive', 'Neighborhood', 9, 'Channels', 1:ERP.nchan, ...
    'Interval', [ -25 25 ], 'Label', 'P3');
ERP.peaks = [N2peaks, P3peaks];

% Example method to extract data from the structure for a subset of channels
desiredarray = { 'FZ', 'CZ', 'PZ' };
mastermatrix = NaN(10,numel(desiredarray));
for participants = 1:10
    outputmatrix = NaN(1,numel(desiredarray));
    for cC = 1:numel(desiredarray)
        outputmatrix(1,cC) = ERP.peaks.P3(find(strcmpi({ERP.peaks.P3.channel},...
            desiredarray(cC)})).amplitude;
    end
    mastermatrix(participants,:) = outputmatrix;
end
```